

## Lunar InfraRed (imaging) (LunIR)

Active Technology Project (2016 - 2023)



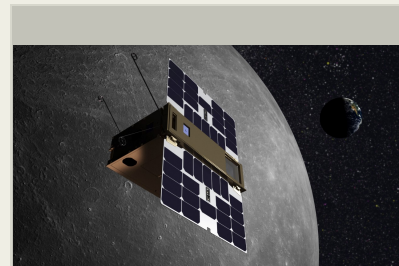
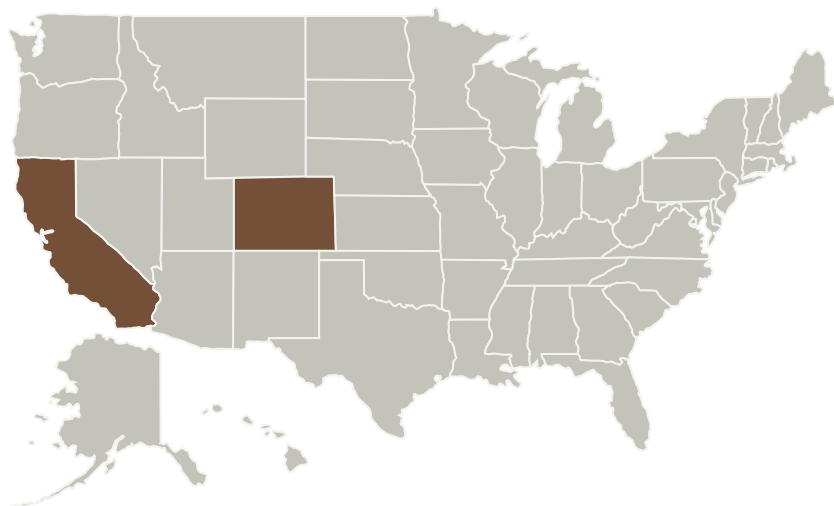
## Project Introduction

LunIR (Lunar InfraRed imaging) is a 6U CubeSat that will be deployed from the SLS on Artemis-1. LunIR is a NextSTEP partnership between NASA and Lockheed Martin. The primary payload is a miniature high temperature Mid-Wave Infra-Red (MWIR) sensor. Key technology elements of the MWIR sensor are an integrated micro-cryocooler and a high temperature nBn based 1-Megapixel focal plane. The spacecraft utilizes 3D printed components. The 6U bus assembly is designed and built as a commercial CubeSat for deep space operation. Mission data will be analyzed for extensibility and application toward NASA lunar, Mars, and deep space Strategic Knowledge Gaps

## Anticipated Benefits

LunIR will demonstrate a commercial CubeSat bus operation in deep space. The very low size, weight and power (SWAP) technologies demonstrated on the LunIR mission - mid-wave infrared sensor, micro-cryocooler, deep space CubeSat relative navigation, 3-D printed components - will provide pathfinder flight demonstration for NASA and the commercial CubeSat industry. Mission data will be analyzed for extensibility and application toward NASA lunar, Mars and deep space Strategic Knowledge Gaps.

## Primary U.S. Work Locations and Key Partners



Lockheed Martin LunIR mission concept rendition.

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## Exploration Capabilities

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Organizations Performing Work	Role	Type	Location
Lockheed Martin Space Systems(LMSS)	Lead Organization	Industry	Sunnyvale, California
Tyvak Nano-Satellite Systems Inc.	Supporting Organization	Industry	Irvine, California

## Organizational Responsibility

### Responsible Mission Directorate:

Exploration Systems Development Mission Directorate (ESDMD)

### Lead Organization:

Lockheed Martin Space Systems (LMSS)

### Responsible Program:

Exploration Capabilities

## Project Management

### Program Director:

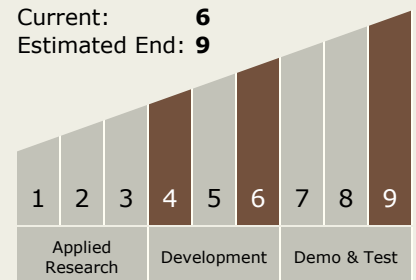
Christopher L Moore

### Project Manager:

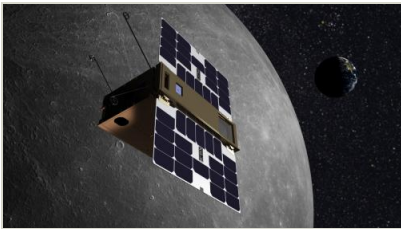
Andres Martinez

## Technology Maturity (TRL)

Start: 4  
Current: 6  
Estimated End: 9



## Images



### LunIR

Lockheed Martin LunIR mission concept rendition.

(<https://techport.nasa.gov/image/143615>)

### Project Website:

<https://www.lockheedmartin.com/en-us/news/features/2021/lunir-to-observe-lunar-surface.html>

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### Technology Areas

#### Primary:

- TX07 Exploration Destination Systems
  - └ TX07.1 In-Situ Resource Utilization
    - └ TX07.1.1 Destination Reconnaissance and Resource Assessment

### Target Destination

The Moon

### Supported Mission Type

Planned Mission (Pull)